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Xenodon pulcher (Jan, 1863) (Serpentes: Dipsadidae) first record for Brazil and a distribution extension

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The snake genus *Xenodon* Boie, 1827 is placed in Xenodontini (Zaher et al., 2009) and currently is comprised of 11 species distributed in the Guyanas, Brazil, Uruguay, Bolivia, Paraguay and Argentina (Peters and Orejas-Miranda, 1970; Cei, 1993; Scrocchi and Cruz, 1993; Giraudo and Scrocchi, 2002; Giraudo, 2002; Carreira et al., 2005; Nenda and Cacivio, 2007; Cacciali, 2009). Among them are species formerly placed in *Lystrophis* Cope, 1885 and *Waglerophis* Romano & Hoge, 1973, recently synonymized with *Xenodon* because of their close phylogenetic relationships (Zaher et al., 2009).

Xenodon pulcher (Jan, 1863) is distributed from eastern Bolivia to western Paraguay and northern Argentina, and is associated with the Chaco ecoregion (Scrocchi and Cruz, 1993; Leynaud and Bucher, 1999; Cacciali, 2009; Wallach et al., 2014). *Xenodon mattogrossensis* (Scrocchi and Cruz, 1993) occurs mainly in the Brazilian states of Mato Grosso and Mato Grosso do Sul, and is associated with the floodplain of the Pantanal (Scrocchi and Cruz, 1993; Giraudo, 1997; Strüssmann et al., 2011).

We analyzed specimens housed in the Museo de Historia Natural del Paraguay (MNHNP) and in the Colección Zoológica de la Facultad de Ciencias Exactas y Naturales (CZCEN), both in San Lorenzo, Paraguay and in the Coleção Zoológica de Referência da Universidade Federal de Mato Grosso do Sul (ZUFMS), Campo Grande, Brazil. We analyzed morphological attributes (counts of ventrals, subcaudals, preocular scales and complete triads on the body and tail) to determinate the correct identity of specimens from Porto Murtinho. Damaged specimens were excluded from analysis. Counts of ventrals follow Dowling (1951), and paired cephalic scales are presented in left/ right order. Every record was georeferenced, digitalized and plotted on a map using ArcGis 10. For ecoregions we follow Dinerstein et al. (1995).

During a revision of material in the Coleção Zoológica de Referência da Universidade Federal de Mato Grosso do Sul (ZUFMS) we found specimens identified as *X. mattogrossensis*, collected in the municipality of Porto Murtinho, with characteristics that are not usually found in this species. *Xenodon mattogrossensis* has 21 scales at midbody, dorsal coloration with red, black, white, black rings in 9-15 pairs, 122-141 ventral scales, the black rings with white spots, *X. pulcher* has also 21 scales at midbody, with red, black, white, black rings, 8 to 12 pairs of black bands on the body and 151-168 ventrals, without white spots on the black rings (Scrocchi and Cruz, 1993). Porto Murtinho is located in southwestern Mato Grosso do Sul state, and includes a portion of Chaco ecoregion in its limits (Souza et al., 2010). After a review of the material, we present here the first record of *X. pulcher* for Brazil, and update the records of *X. mattogrossensis* and *X. pulcher.*

After examination of "59" specimens of *Xenodon* 23 were assigned to *Xenodon pulcher*, 32 to *X. mattogrossensis* and four to *Xenodon pulcher*. There

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Figure 1. Comparison of *Xenodon mattogrossensis and X. pulcher*. Arrows point to white spots in the lateral side of black rings in *X. mattogrossensis* that are absent in *X. pulcher*. a) *X. mattogrossensis*, Fazenda Nhumirim, Corumbá, Mato Grosso do Sul (Photo by Marcio Martins); b) *X. pulcher*, Fazenda Patolá, Porto Murtinho, Mato Grosso do Sul (Photo by Franco Leandro de Souza); c) specimen of *X. mattogrossensis* (ZUFMS-REP 1516); d) specimen of *X. pulcher* (ZUFMS-REP 1003-CH290).

is high variation in our data and considerable overlap between the meristic characters of *X. pulcher* and *X. mattogrossensis*; however *X. mattogrossensis* differs from *X. pulcher* and *X. semicinctus* in the presence of lateral white spots on the black rings (Scrocchi and Cruz, 1993), and the specimens from Porto Murtinho do not have these (Fig. 1). *Xenodon pulcher* has a preference for arid environments, and *X. mattogrossensis* for more humid habitats (Scrocchi and Cruz, 1993; Leynaud and Bucher, 1999). With those results, we confirm the record of *X. pulcher* for Brazil previously cited as *X. mattogrossensis* (Souza et al., 2010). The place

Table 1. Variation in ventrals and subcaudals, and numbers of triads on the body and tail of *Xenodon pulcher* and *X. mattogrossensis*.

Species	Ventrals	Subcaudals	Body triads	Tail triads
Xenodon pulcher (n=27)	143-169	25-40	8-13	1-2
Xenodon mattogrossensis (n=32)	129-147	21-36	9-17	0-4

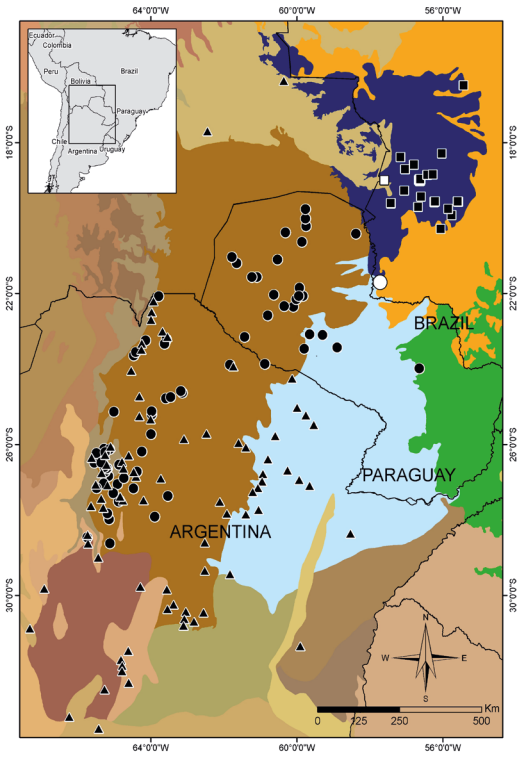

Figure 2. Distribution of *Xenodon pulcher* (black circle), *Xenodon mattogrossensis* (black square) and the new locality for *X. pulcher* in Porto Murtinho, Brazil (white circle); white square represent the record from Marques et al. (2005), the black triangle represents records of *X. pulcher* from Scrocchi & Cruz (1993) and Nena & Cacivio (2007). Dark green represents Atlantic Forest, orange Cerrado, light blue Humid Chaco, brown Dry Chaco and dark blue Pantanal.

where the specimen was collected is part of the Chaco region of Brazil and is an environment with a mix of dry thorn shrublands and temporary water ponds. The Porto Murtinho record extends the previously known distribution of *Xenodon pulcher* 160 km east of the nearest locality in Paraguay in department Alto Paraguay (Colonia Potrerito, MNHNP 5206) (Fig. 2).

Scrocchi and Cruz (1993) revalidated *Xenodon pulcher* based on only one specimen from Paraguay (Departamento San Pedro, Carumbé). With this work we provided more data on the pholidosis and variation in *X. pulcher* as well as in *X. mattogrossensis* (Table 1). For *X. pulcher*, we extend the range of the number of black bands on the body to 13 pairs; and the range of ventrals and subcaudals to 169 and 40, respectively. In *X. mattogrossensis,* we extend the range of the number of ventrals to 147.

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